

Habita!.—Virginia.

Holotype.—♂, Difficult Run, Potomac River, October 28, 1917. (W. L. McAtee).

Paratypes.—♂, Great Falls, April 20, 1913, (C. P. Heinrichs); 2 ♂'s, Dead Run, May 10, 1916, (W. L. McAtee); 1 ♂, Virginia, near Plummer's Island, September 29, 1915, (W. L. McAtee).

HEMIPTERA FROM PEAKS ISLAND, MAINE, COLLECTED BY MR. G. A. MOORE.

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During the seasons of 1918 and 1919 my friend Mr. G. A. Moore had brief opportunities for collecting on Peaks Island, in Portland Harbor, and has been kind enough to send to me for study the Hemiptera which he gathered there. This collection proves to be of considerable interest and merits a full report, especially since the published records from this part of Maine are very meagre. Some of the species are additions to the state list; one, *Stygnocoris rusticus*, has never before been found in the United States; and another is the first American representative of the Anthocorid genus *Tewaphleps*.

SCUTELLERIDÆ.

- Homaemus aeneifrons* (Say). 1 Aug. '18, 4 Aug. '19.
Eurygaster alternata (Say). 3 Aug. '19.

CYDNIDÆ.

- Thyreocoris pulicarius* (Germar). 8 Aug. '19.

PENTATOMIDÆ.

- Peribalus limbolaris* Stal. 3 Aug. '18. New to the Maine list.
Mormidea lugens (Fabricius). 23 July, '18.
Euschistus tristigmus (Say). 28 July, '18.
Neottiglossa undata (Say). 27 July, '18.
Cosmopepla bimaculata (Thomas). 26 Aug., '19.
Meadorus lateralis (Say). 1 Aug., '19.
Elasmostethus cruciatus (Say). 4 Aug., '18.
Podisus modestus (Dallas). 8 Aug., '19.
Podisus placidus Uhler. 26 Aug., '19.

NEIDIDÆ.

- Neides muticus* (Say). 29 July, '18.

LYGAEIDÆ.

- Nysius ericæ* (Schilling). 2 Aug., '18.
Ischnorhynchus geminatus (Say). 31 July, '18; 10 Aug., '19.
Phlegyas abbreviatus (Uhler). 24 July, '18.
Ligyrocoris diffusus (Uhler). 29 July, '18.
Ligyrocoris contractus (Say). 27 July, '19.
Kolenetrus plenus (Distant). 26 July, '18.

A male of this rare species, new to the Maine list, was found under moss.
Stygnocoris rusticus (Fallén). 31 July, '18; 8 Aug., '19.

This European species has recently been reported from Quebec and Nova Scotia. Its characters are discussed by Barber in one of his valuable papers on the Lygaeidae,¹ where he makes the comment, "The species has not yet been found within the United States, but it should occur in the mountainous parts of New England and New York." Boreal forms are likely to occur anywhere in Maine, becoming restricted to mountainous regions as their range extends southward.

TINGIDÆ.

Corythucha marmorata (Uhler). 31 July, '19.

Corythucha juglandis (Fitch). 10 Aug., '19.

***Corythucha pyriformis*, sp. nov.**

Membranous portions very clear hyaline, the surface shining; disc of pronotum brown; dorsal veinlets of hood very slightly marked with brown; paranota with a single distinct dark brown spot before middle; median carina with a very indistinct brown spot; lateral carinae and apex of angulate process white with a brownish tinge. Hemelytra with distinct dark brown basal and apical bands, the latter equal in width to one-third entire length of hemelytron, enclosing three or four large, almost entirely hyaline areoles, the apical row of areoles largely hyaline from apex of wing inwardly. Antennae, legs except tarsi, and edges of plates forming rostral groove yellow.

Hood slightly higher than median carina and somewhat longer, its height one-half its length, its width not quite one-third width of entire pronotum (14-46); hood pyriform, slightly constricted, sides convergent anteriorly and but slightly concave as viewed from above, anterior lobe thus not distinctly marked off; dorsal areoles very large; hood as seen in profile very slightly rounded above except at ends, moderately arcuate as a whole. Median carina slightly shorter than hood (24-26), slightly and angulately arched, with two rows of areoles at middle, its height less than one-third its length (7-24). Lateral carinae moderately developed, with three or four areoles, terminating far from base of hood. Paranota large, unusually expanded anteriorly and together widest well before middle. Costal margin of hemelytra nearly straight; marginal spines of paranota and hemelytra few and rudimentary; discal elevations of moderate size, with sharp dorsal edge, not strongly inflated; costal area largely triseriate; hemelytra broadly rounded at apex. Antennae with numerous setae. Length ♂ 4.08 mm.; width 2.34 mm.

Holotype ♂, Peaks Island, Maine, 31 July, '19, (G. A. Moore), in my collection. Paratype ♂, Franconia, New Hampshire (Mrs. A. T. Slosson), in Mrs. Slosson's collection.

This species is closely related to *pruni* Osborn and Drake, although by following Gibson's key² strictly it runs to *hoodiana* Osborn and Drake. From the former it may be distinguished by the structure of paranota and hood, the slight development of marginal spines, and broader form. The latter, known only from Oregon, is described as larger (length 4.3 mm.), with strongly constricted hood.

Melanorhopala clavata Stal. 26 Aug., '19.

1. Concerning Lygaeidae.—No. 2, Jour. New York Ent. Soc., Vol. 26, 1918, p. 53.
2. The Genus *Corythucha* Stal. Trans. Am. Ent. Soc., Vol. 44, 1918, p. 74.

NABIDÆ.

Nabis subcoleoptratus Kirby. 29 July, '18.

Nabis ferus (Linné). 31 July, '19.

Nabis roseipennis (Reuter). 25 July, '18; 1 Aug., '19.

There is difference of opinion concerning what I take to be the short-winged female of this species. Some are inclined to consider that such specimens represent the *Nabis inscriptus* of Kirby, as redefined by Reuter,³ but the only distinctive character given by the latter author, applicable to the female, is the short first antennal segment, and I have yet to see a specimen exhibiting this feature; moreover, Reuter states that *inscriptus* is very similar to *brevis*, from which it is distinguished by its smaller head and less prominent eyes, and, it would seem, its shorter first antennal segment.

Nabis rufusculus (Reuter). 26 July, '19.

Certain of the commonest species of *Nabis* present perplexing difficulties in determination. It is hoped that the following key to the north-eastern species will aid in identification of specimens and serve to draw the attention of students to these interesting forms. Some time ago I was privileged to spend an evening with my friend H. G. Barber in the study of his collection and MS. notes on this group, and with his permission I have incorporated in this synopsis the pertinent results of that conference. Subsequent study has shown that Reuter's subgeneric criteria are of great value in understanding the group, and that the male genital characters, emphasized by Reuter, should not be neglected.

1. Body in large part shining black; head distinctly and obliquely narrowed behind eyes; front femora without spines; wing cell with hamus arising from origin of decurrent vein (Subgenus *Nabicula* Kirby); length 9-10.5 mm.....*subcoleoptratus* Kirby.
Body wholly or in large part pallid or brown; head parallel or nearly so behind eye..... 2.
2. Front femora with minute spines below; wing cell with hamus; connexivum more or less distinctly spotted; femora spotted, annulate at apex; tibiæ annulate (Subg. *Hoplistoscelis* Reuter); length 6.4-7 mm..*sordidus* Reuter.
Front femora without spines; connexivum usually not spotted..... 3.
3. Femora with a subapical dark ring; wing cell without hamus; hind lobe of pronotum distinctly punctate (Subgenus *Lasiomerus* Reuter); length 8-9.5 mm..... *annulatus* Reuter.
Femora without ring; wing cell with hamus; hind lobe of pronotum almost or quite impunctate..... 4.
4. Form elongate; short-winged forms with hemielytra less than three times length of scutellum; first antennal segment generally about as long as head; hamus arising very near or at origin of decurrent vein; long-winged forms extremely rare (Subgenus *Dolichonabis* Reuter)..... 5.
Form broader, more or less ovate; short-winged forms usually with much longer hemielytra; first antennal segment generally shorter than head; hamus arising from decurrent vein; long-winged forms common as a rule (Subgenus *Nabis* Latreille)..... 6.

3. Bemerk. ueb. Nabiden, Mem. Soc. Ent. Belgique, Vol. 15, 1908, pp. 87-130.

5. Form very narrow; head about five times longer than wide between eyes; hemielytra in short-winged form rounded at apex, membrane lacking; length 9–12.5 mm..... *propinquus* Reuter.
Form broader; head about three times longer than wide between eyes; shortened hemielytra truncate at apex, membrane present; length 7.5–8.75 mm..... *limbatus* Dahlbom.
6. Hemielytra in long-winged form without three brown dots; undeveloped hemielytra much shorter than abdomen; dorsal surface of abdomen dark brown, margin of connexivum and single or double median stripe pale; length 8–9 mm..... *flavomarginatus* Scholz.
Hemielytra in long-winged form with three brown dots, one on disc of corium, two on membranal suture; undeveloped hemielytra about as long as abdomen; dorsal surface of abdomen without median stripes.....7.
7. First antennal segment very slightly longer than antecular portion of head; dorsal surface of abdomen black; tibiae with black dots; copulatory hooks of male with large semicircular short-pointed blade and short stem (*vide* Reuter)..... *inscriptus* Kirby.
First antennal segment much longer than antecular portion of head.....8.
8. Colour gray; form narrow; markings of posterior surface of front and middle femora tending to become a transverse striping; tibiae immaculate.....9.
Colour reddish to dark brown; form broader; femora conspicuously spotted, less tendency to striping.....10.
9. Anterior femora extending beyond apex of head; copulatory hooks of male with large semicircular blade and stem broadened basally; length 6.5–8.5 mm..... *ferus* Linné.
Anterior femora not reaching apex of head; copulatory hooks with small elongated blade and broad arcuate stem; length 6–6.5 mm. (recently introduced from Europe)..... *brevis* Scholz.
10. Posterior tibiae dotted; colour dark brown; membrane in short-winged form with closed cells; hooks with small triangular blade and long, broad, undulated stem; length 6.5–8.5 mm..... *roseipennis* Reuter.
Posterior tibiae immaculate; colour pale reddish brown; membrane in short-winged form without closed cells; hooks with large, semicircular, long-pointed blade and short stem; length 5.6–7 mm..... *rufusculus* Reuter.

ANTHOCORIDÆ.

Genus *Tetraphleps* Fieber.

Fieber, Wien. Ent. Monat., Vol. 4, 1860, p. 262, Pl. 6, Fig. F; Id., Eur. Hem., 1861, pp. 37–38, 135–136.

Reuter, Monog. Anthoc., 1884, p. 56, 85.

Slosson, Ent. News, Vol. 17, 1906, p. 326.

Body finely pubescent; eyes slightly distant from pronotum; first rostral segment not extending beyond insertion of antennæ; second antennal segment clavate, third and fourth fusiform. Sides of pronotum explanate and suddenly curved inward anteriorly, extending more or less beyond level of base of pronotal collar. Membrane with four distinct veins. Metasternal canals nearly or quite straight, very slightly oblique, tending posteriorly, prominently

elevated and free apically, the longitudinal line extremely fine, very slightly curved, forming a right angle with the canal.

This genus is distinguished from *Anthocoris* Fallén especially by the explanate lateral margins of the pronotum, more distinctly punctate hemielytra, and the apical prominence of the metasternal canals.

North American species of this palaeartic genus are here recorded for the first time, although Mrs. A. T. Slosson in her tenth Mount Washington list includes "Tetraphleps, n. sp." Finding an example of this genus among Mr. Moore's material, I wrote Mrs. Slosson in regard to the matter, and I am indebted to her kindness for the privilege of examining the specimen (determined as above by Heidemann) which served as a basis for the Mt. Washington record. This proves to be distinct from the Peaks' Island specimen. Mr. Van Duzee has kindly sent for study an Ontario example, identical with the Peaks' Island individual, which he had independently recognized as undescribed. Both species are distinct from the old world forms, and are characterized herewith.

***Tetraphleps americana*, sp. nov.**

Dark piceous; head, pronotum, and scutellum concolorous; second antennal segment more or less distinctly paler at middle. Hemielytra light brown, variegated; apex of clavus, corium and embolium inwardly, most of cuneus, and the sutures and veins darker; membrane smoky brown, basal and two lateral spots, and vittæ following veins white; membranal suture polished, broadly black from apex of clavus to origin of outer vein. Ventral surface and legs dark piceous; apices of femora, thoracic sterna, pleura, and epipleura (of hemielytra) paler. Rostrum piceous or black.

Dorsal surface shining, with conspicuous slightly curled pale pubescence and a few long, erect black setæ on head, pronotum, and scutellum. Head elongate (23-20 including eyes, excluding collar); vertex longitudinally rather convex, eyes moderately prominent, the transverse diameter of an eye not quite equal to one-half width between eyes (5-11); length of antecular portion slightly more than twice the length of an eye. Juga strongly constricted before insertion of antennæ, compressed and prominent at apex; anterior and of tylus rounded, apex of head thus bi-emarginate. Rostrum extending well beyond front coxæ, second segment becoming slenderer before middle, more than twice length of third (30-14). Antennæ with fine pale pubescence and rather numerous long erect setæ, longer than head and pronotum together (52-45); first segment reaching middle of expanded portion of juga; second segment in length equal to width of head including eyes, enlarged in apical third; third almost cylindrical; fourth fusiform, thicker than second at apex; third and fourth equal in length, together longer than second (26-20). Pronotum obsoletely rugulose, with sparse, minute, but sharply distinct punctation posteriorly; length on median line two-fifths width at base; posterior margin broadly rounded at middle; lateral margins straight, strongly convergent, slightly rounded anteriorly; explanate portions very narrow, scarcely reflexed, reduced to a fine carina behind middle, extending anteriorly but little beyond level of base of collar. Scutellum polished, slightly tumid at base, transversely depressed just behind middle, transversely rugulose at apex. Hemielytra slightly narrower than abdomen at base of cuneus (♀), apex of latter acute; length of membrane be-

yond level of cuneal apices distinctly less than length of cuneus; veins of membrane distinct, variable, connected apically by a very feeble arcuate vein. Length ♀ 3.35–3.67 mm.; width 1.39–1.50 mm

Holotype.—♀, Peaks Island, Maine, 3 Aug., 1919, (G. A. Moore), in my collection.

Paratype.—♀, Ottawa, Canada, 1 Sept., 1905, (A. Gibson) (bears also label reading Gibson 7–21–12), in Van Duzee's collection.

This species is especially distinguished by the very narrow explanate margins of the pronotum, which do not extend forward to the middle of the pronotal collar and turn sharply inward and backward as they do in the palæarctic *bicuspis* Herrich-Schaeffer (*vittatus* Fieber). The proportions of antennal and rostral segments are somewhat different, the surface is more shining, and the fine pubescence of the dorsal aspect is twice as long in *americana*. Through the kindness of Mr. E. H. Gibson I have had for comparison a fine series of *bicuspis*, collected and determined by Montandon.

Tetraphleps uniformis, sp. nov.

Similar to *americana* except in the following characters:

Colour almost uniform light brown, head a shade darker, hemielytra a shade lighter. Membrane light smoky brown, with a very vague paler area at base and one along middle portion only of each vein. Tibiæ inwardly and apices of femora pale.

Head excluding collar and including eyes as long as broad; the diameter of an eye distinctly less than one-half width of vertex (5–13); length of antecular portion distinctly less than twice the length of an eye (12–8). Antennæ long and slender, much longer than head and pronotum together (60–45); first segment reaching almost to apex of juga; second segment longer than width of head including eyes (24–22). Pronotum distinctly transversely rugulose in basal area, the punctures here most extremely fine. Basal emargination very obtusely angulate, not rounded (possibly a variable character). Lateral explanate margins very narrow, but appreciably reflexed. Apex of cuneus narrowly rounded. Membrane long, its length beyond cuneal apices equal to length of cuneus. Length ♀ 3.68 mm.; width 1.46.

Holotype.—♀, Mt. Washington, New Hampshire (Mrs. A. T. Slosson), in Mrs. Slosson's collection.

This species may be distinguished from *americana* by its pale, uniform coloration and by the proportions of head, antennæ, and membrane. Probably the American forms will be found to occur on coniferous trees, since the European *T. bicuspis* is reported as frequenting firs and larches in England.

Van Duzee has communicated to me his opinion that Provancher's description⁴ of *Tetraphleps canadensis* seems to refer to a true *Tetraphleps*, although the specimen bearing this name in the Provancher collection is a species of *Lyctocoris*. The mention of hemielytra "à coin fort long" and membrane "avec 4 nervures longitudinales très distinctes" would favour this opinion, but on account of the omission of more important characters it is hardly possible to reach a certain conclusion. Provancher's description is scarcely detailed enough for specific recognition, and even as far as it goes it fails to apply closely to either of the species characterized above.

4. Pet. Faune Ent. Can., Vol 3, 1886, p. 90.

Triphleps insidiosa var. *tricolor* White. 29 July, '18. New to the Maine list.

MIRIDÆ.

Collaria meilleurii Provancher. 29 July, '18; 1 Aug., '19.

Miris dolabratus (Linné). 24 July, '18.

In his exhaustive accounts of this species,⁵ Professor Osborn advances the hypothesis that it is an introduced form, having reached this country about 1800, but it seems to me at least equally probable that it is truly holarctic. Horvath⁶ includes *dolabratus* in his list of species which owe their presence here "non à une importation artificielle," adducing divers general considerations not touched upon by Osborn. With reference to the five arguments proposed by the latter, we may note that the early records of Hemiptera omit also many very common and certainly native forms and are in general too fragmentary to have much weight in the matter; that the indications of "a gradual westward and southward dispersal" may possibly be correlated with the spread of interest in the Hemiptera rather than with the movements of the species; and that the presence of *dolabratus* in the interior of British Columbia (Lillooet) and in wild parts of northern Maine (Traveller Mt.), according to records which I have published, is not very likely to be due to the introduction of cultivated grasses from Europe. The species occurs in Siberia, as well as in Europe, and we should await further evidence from the interior of British America and from Alaska before considering the question as settled.

Stenodema vicinum (Provancher). 24 July, '18; 3 Aug., '19.

Platytyellus insitivus (Say). 4 Aug., '19.

Pithanus maerklii (Herrich-Schaeffer). 30 July, '18; 31 July, '19.

Another species which may be either holarctic or introduced.

Neurocoplus nubilus (Say). 31 July, '18.

Phytocoris lasiomerus Reuter. 3 Aug., '19.

Phytocoris pallidicornis Reuter. 8 Aug., '19.

Phytocoris eximius Reuter. 6 Aug., '19.

Phytocoris tibialis Reuter. 3 Aug., '19. New to the Maine List.

Phytocoris mundus Reuter, var. 31 July, '18.

Adelphocoris rapidus (Say). 31 July, '19.

Poeciloscytus basalis Reuter. 3 Aug., '18.

Capsus ater (Linné). 24 July, '18.

Coccobaphes sanguinareus (Uhler). 10 Aug., '19.

Lygus pratensis var. *oblineatus* (Say). 3 Aug., '18.

Lygus pabulinus var. *signifer* Reuter. 27 July, '18; 10 Aug., '19.

Lygus confusus Knight. 10 Aug., '19.

One male and two females of this species, hitherto known only from the single type and an associated female. Knight has studied and determined these specimens.

Lygus communis Knight. 3 Aug., '19.

Lygus omnivagus Knight. 27 July, '18.

Lygus belfragei Reuter. 2 Aug., '18; 28 July, '19.

5. The meadow plant bug, Bull. Maine Agr. Exp. Sta., No. 276, 1919. The meadow plant bug, *Miris dolabratus*, Jour. Agr. Research, Vol. 15, 1918, pp. 175-200.

6. Rel. entre faunes Hém. Eur. et Am., Ann. Mus. Nat. Hungarici, Vol. 6, 1908, pp. 1-14.

The second specimen recorded has the clavus entirely dark and the apical dark spots of corium larger than usual though, as is characteristic of the species, they fail to reach the lateral margins.

- Lygus hirticulus* Van Duzee. 29 July, '18.
- Camplobrochis nitens* Reuter. 8 Aug., '19.
- Camplobrochis* sp. 30 July, '19.
- Determined by Knight, who is at work on the genus.
- Monalocoris filicis* (Linné). 29 July, '18; 10 Aug., '19.
- Hyaliodes vitripennis* (Say). 30 July, '19.
- Dicyphus agilis* (Uhler). 30 July, '18.
- Dicyphus famelicus* (Uhler). 26 Aug., '19.
- Strongylocoris stygicus* (Say). 6 Aug., '19.
- Pilophorus amoenus* Uhler. 31 July, '18.
- Lopidea media* (Say). 29 July, '19.
- Diaphnidia pellucida* (Uhler). 30 July, '19; 4 Aug., '18.
- Orthotylus flavosparsus* (Sahlberg). 31 July, '18.
- Orthotylus cruciatus* Van Duzee. 2 Aug., '18.
- Ilnacora malina* (Uhler). 3 Aug., '19.
- Onychumenus decolor* (Fallén). 26 July, '19.
- Plagiognathus* spp.
- Several species which cannot be determined at present.
- Campylomma verbasci* (Meyer-Dür). 29 July, '18.

GERRIDÆ.

- Gerris marginatus* Say. 28 July, '18; 8 Aug., '19.
- Limnopus rufoscutellatus* (Latreille). 8 Aug., '19.

NOTES ON THE LARVÆ AND PUPÆ OF CERTAIN
PTEROPHORID SPECIES. (LEPIDIDÆ).*

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In the vicinity of Chelsea, Que., a small village on the Gatineau River about nine miles north of Ottawa, I found the larvæ of four Pterophorid species quite abundant during the latter half of May, 1919. Two species, *Pterophorus elliotti* Fern. and *P. eupatorii* Fern., occurred on *Eupatorium*; two others, *Pterophorus homodactylus* Wlk. and *Trichoptilus lobidactylus* Fitch. fed on the terminal buds of a *Solidago* species, the latter being very numerous, the former comparatively rare.

Dr. Dyar (1898, *Psyche*, VIII, 249) has already published notes on the larval and pupal stages of three of these species, viz., *T. lobidactylus*, *P. elliotti*, and *P. eupatorii*; in the same paper he is inclined to doubt the specific distinctness of *P. homodactylus* from *P. elliotti*, which is not to be wondered at when the great similarity of the adults is taken into consideration. Dr. Dyar is correct in considering the larval description of *homodactylus* published by Fernald in his monograph of the Pterophoridae (p. 41) to be that of *elliotti*; both larva and pupa of the true *homodactylus* (the *Solidago* feeder), however, show excellent characters whereby they may be separated from *elliotti* and the two are undoubtedly distinct species.